WEST BOYLSTON WACHUSETT NO. 47 SUBSTATION
TESTIMONY OF DANIEL MCINTYRE, P.E.

Q. Would you please state your full name, business address, and position with respect to the petitioning company?

A. My name is Daniel McIntyre. My business address is 55 Bearfoot Road, Northborough, MA. I am a Principal Engineer in the Substation Engineering Group of the National Grid USA Service Company, which performs engineering and other services for New England Power Company (NEP) and other subsidiaries of National Grid USA.

Q. What are your professional qualifications?

A. I received a bachelor of science in Civil Engineering from Worcester Polytechnic Institute in 1981. I am a registered professional engineer in the States of Massachusetts, New Hampshire and Rhode Island with over 20 years experience in the civil engineering field. For the past 13 years I have worked for National Grid with the responsibility for providing civil engineering support to the permitting, design and construction of electric substations.

Q. What is your responsibility for this project?

A. I am responsible for the civil engineering design of the project.

Q. Were the designs done by you or by others under your supervision?

A. Yes, they were.

Q. What is the purpose of your testimony?

A. My testimony will describe the sanitary facilities, stormwater management and spill prevention, controls and countermeasures proposed for this project. I will also describe certain water protection issues relevant to the proposed project.

Q. Will you please provide a description of the sanitary facilities proposed for the the project?

A. The new substation control building will be provided with a sink and toilet facilities. Since the substation is not manned, there will be only infrequent use of these facilities. However, because the site is in an isolated area, permanent toilet facilities are considered necessary for the convenience of maintenance personnel. Water will be provided by connection to existing water main in Temple Street owned by the West Boylston Water District, a private water company. NEP will obtain any required permits from the DEP, DCR, Town of West Boylston and the West Boylston Water District, prior to construction.

Q. Will you please provide a description of the stormwater management practices designed for the proposed project?

A. The project has been designed to comply with the Department of Environmental Protection's (DEP) Stormwater Management Policy. This policy is administered by the West Boylston Conservation Commission through our Notice of Intent filing.

Due to their unique construction, substations typically do not generate large increases in stormwater runoff. NEP substations are prepared by clearing organics and topsoil and backfilling with well-drained gravel to create a near level pad. The substation is raised above surrounding grades or provided with perimeter swales to prevent drainage from running into the substation site. The fenced area is then covered with a layer of loose crushed stone. After storm events, the crushed stone surface and well-drained gravel will cause rainfall to infiltrate and prevent standing water. The impervious surfaces within the substation yard, concrete foundations and internal access driveway, will sheet off to the crushed stone and infiltrate into the soil.

Two other stormwater management practices have been included in the Wachusett site design. First, the roofs of the 115 kV GIS building, the 345 kV GIS building and control building are larger than a typical substation. Therefore the runoff from these roofs will be collected and piped to underground infiltration chambers.

This is a best management practice (BMP) identified by DEP to handle roof runoff. Second, the existing driveway, which will continue to be used for access to the site, will be upgraded to include stormwater BMP's to treat runoff from the pavement. Currently the driveway drains to surrounding areas without treatment. The proposed design will collect runoff from the driveway and treat the first one-inch of rainfall in a stormwater infiltration basin.

Q. Will you please provide a description of the Spill Prevention Control Countermeasures designed for the proposed project?

A. The site currently has one (1) 115 kV to 69 kV transformer. The proposed ultimate expansion will involve the installation of three (3) additional 115 kV to 69 kV transformer and two (2) 345 kV to 115 kV transformers. Each transformer is cooled by circulating mineral oil dielectic fluid (MODF). The existing transformer contains approximately 5700 gallons of MODF. The total MODF volume after completion of the project will be approximately 100,000 gallons. Since the substation will be developed in two phases, only two of the 345 kV transformers will be installed at this time with a total MODF volume of approximately 60,000 gallons.

In accordance with U. S. Environmental Protection Agency's (EPA) spill prevention control and countermeasures (SPCC) requirements (Title 40 CFR Part 112), containment must be provided to prevent spills from reaching navigable

waters. The proposed transformers will be supported on concrete foundations with a concrete secondary containment system. Secondary containment design will follow guidelines established by EPA and ANSI/IEEE Standard 980, "IEEE Guide for Containment and Control of Oil Spills in Substations." See Exhibit DM-1 The secondary containment designed for this project consists of a concrete floor and wall system as shown on Exhibit DM-2. Accumulated stormwater will be managed in accordance with National Grid Environmental Procedure No. 1 Section 14.3 (Exhibit DM-3). The existing transformer will be relocated to a new foundation with a concrete secondary containment. The EPA and ANSI/IEEE standards recommend that all substation equipment containing oil must have secondary containment for the entire contents of the largest single container within the containment area, plus sufficient freeboard to allow for precipitation. Instead of providing containment for only the largest single container, NEP will provide specific containment for 100% of the MODF volume of each transformer plus an additional 20% to allow for accumulated precipitation.

As required by EPA, the current SPCC Plan for the Wachusett site will be updated to address the expansion and additional MODF filled equipment.

Q. Please describe the watershed protection aspects of the proposed project.

A. This area is protected under the DCR Watershed Protection Act and Town of West Boylston Water Resources Overlay Zoning District. The Watershed Protection Act creates a 200 foot primary protection zone and a

400 foot secondary protection zone off surface water supplies and its tributaries. The project expansion has been designed to comply with the Watershed Protection Act by avoiding new disturbances in the primary protection zone and minimizing impervious surfaces in the secondary protection zone as shown on Exhibit AJM-2.

Q. What about local water protection regulations?

A. The Town of West Boylston Water Resources Overlay Zoning District protects the water resources by regulating or conditioning land uses that may be detrimental to drinking water supplies. The zoning bylaw does not specifically address electric substations but does prohibit storage of petroleum products except in limited circumstances. The MODF coolant in the transformers, described in the testimony of Mr. Paul Richards, could be interpreted as storage of petroleum products since MODF is mineral oil-based. However, transformers are not storage vessels and are designed as pressurized, sealed units with alarms for low pressure and low liquid levels. The transformer designs, secondary containment system and SPCC plan required by EPA regulations are considered adequate to protect the interests of the overlay district.

Q. What other considerations has NEP given to water resource protection for this proposed project?

A. Another potential impact on water resources could be from the construction activities. Erosion controls will be implemented to prevent sediment from traveling to surface waters or its tributaries and wetlands. These controls are described in the Storm Water Pollution Prevention Plan, provided as Exhibit DM-4. The erosion controls measures used to protect water resources will be reviewed and approved through the permitting processes of the DRC, DEP and the West Boylston Conservation Commission.

Q. Does this conclude your testimony?

A. Yes, it does.

LIST OF EXHIBITS

DM-1	ANSI/IEEE Standard 980, IEEE Guide for Containment and Control of Oil Spills in Substations.
DM-2	H-75989-P, Construction Details
DM-3	Environmental Procedure No. 1
DM-4	Storm Water Pollution Prevention Plan